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ABSTRACT

This unit for elementary school students (grade 5) provides materials for about five class periods. Emphasized are language arts and social studies activities related to ships and seaways. Activities include topics on common vessels, shipping routes, navigational guides, and art and writing related to field experiences. A number of transparency masters and a suggested book list are included. (RH)

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SHIPS AND SEAWAYS

A Learning Experience for
Coastal and Oceanic
Awareness Studies

Produced by

MARINE ENVIRONMENT CURRICULUM STUDY
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UNIVERSITY OF DELAWARE

and

POPULATION-ENVIRONMENT CURRICULUM STUDY
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UNIVERSITY OF DELAWARE

as part of a

PLAN FOR ENVIRONMENTAL EDUCATION

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Please send evaluations

of learning experiences

to

Dr. Robert W. Stegner, Director

COAST Project

310 Willard Hall Education Building

University of Delaware

Newark, Delaware 19711

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TITLE: SHIPS AND SEAWAYS

*CONCEPT: IV.C.3.a.

IV. Cultural evolution led to dominance of the environment.

C. The growth of science and technology increased man's use of natural resources.

3. Technological enterprises increased man's control of the environment.

a. MAN CAN TRAVEL RAPIDLY FROM PLACE TO PLACE.

**MARINE CONCEPT: 4.11

4. Man is part of the marine ecosystem.

4.1 The marine environment has affected the course of history and the development of human cultures.

4.11 THE OCEANS HAVE SERVED AS ROUTES FOR THE DISPERSAL OF HUMAN POPULATIONS AND CULTURES AND FOR COMMERCIAL TRANSPORT.

GRADE LEVEL: 5

SUBJECTS: Social Studies, Language Arts

CLASS PERIODS: 5

AUTHORS: Murray and Osborne

*From A Conceptual Scheme for Population-Environment Studies, 1973. Cost $2.50.

**From Marine Environment Proposed Conceptual Scheme, 1973. No charge.

Both conceptual schemes are available from Robert W. Stegner, Population-Environment Curriculum Study, 310 Willard Hall, University of Delaware, Newark, DE 19711.

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INSTRUCTIONAL OBJECTIVES

Upon completion of this lesson plan the student should:

1. Be able to list (or name) the eight common vessels studied (passenger ship, ferryboat, cargo ship, tanker, U.S. Coast Guard ship, aircraft carrier, tugboat, and fireboat) and describe how each vessel is used.

2. Know what a shipping route is and that it is affected by ocean currents.

3. Know the uses of certain navigational guides, e.g., channel markers and buoys.

4. Describe with original drawings and/or written paragraphs any field trip experiences.

PREPARATIONS

1. Make transparencies from the drawings included, Figures 1 through 13, pp. 13-25. The drawings may also be duplicated as student handouts.

2. Obtain for classroom use books with pictures of ships. See References, p. 12.

Note Concerning Grade Level: Since this unit covers a wide span of ages, K-5, the teacher will need to make minor changes in the way of expressing the descriptive material to correspond to the learning level of the students being taught.

Where passages to be read by the students are difficult, the teacher may want to give the information to the class orally or re-write it in simpler words. In cases where words seem above the comprehension of the student, the teacher might use these words for expansion of vocabulary.

LESSON 1 - PASSENGER SHIPS

Show a transparency of the ocean liner (Figure 1). Have the students read the following description of passenger ships:

> Passenger ships, or ocean liners, carry people across the oceans of the world. About 100 years ago, these became popular as a luxurious means of transportation between continents or for pleasure trips to places such as the Caribbean Islands or the South Sea Islands. Passenger ships are like floating hotels with dining rooms, dance halls, swimming pools and hundreds of bedrooms. The staff includes doctors, nurses, cooks and stewards. Unfortunately, this grand means of transportation is a dying business due to the greater use of the faster and cheaper jet airplanes.

Discuss the function of an ocean liner. Some of the facts and figures shown below may be given to the class.

Name of Ship	Year Built	Length	Weight	Number of Passengers	Average Speed for Atlantic Ocean Crossings
Queen Mary (U.K.)	1934	over 1000'	81,235 tons	2250	31.7 knots*
Queen Elizabeth (U.K.)	1938	over 1000'	83,673 tons	2288	31.5 knots
United States (U.S.)	1952	over 1000'	53,330 tons	1500	35.59 knots

*A knot, or one nautical mile per hour, is an international unit equal to 6,076 feet, usually rounded off to 6,080 feet. (A statute mile equals 5,280 feet.) The number of knots x 1.1516 equals the number of miles per hour.

Explain to the students that ocean liner travel is declining. Travelers would rather cross the Atlantic Ocean, for instance, in 7 hours by jet than in 5 days by ocean liner. Also, it is usually cheaper to fly than to go by ship. Consequently, many ocean liners have been retired from service. Some have been moored at resort areas and converted into hotels and restaurants.

Have the students dictate a story on passenger ships based on the reading. The teacher can duplicate the dictated stories and use them as reading lessons. The name of each vessel can be added to the current spelling lesson. Encourage the students to find pictures at home of passenger ships for a bulletin board display.

LESSON 2 - FERRYBOATS

Have the students read the following description of ferryboats:

> Ferryboats carry people, cars, trucks, trains, food, merchandise and almost anything else you can think of across rivers, lakes, streams and other bodies of water. The shape of a ferryboat is usually the same at both the front and rear, so there is no need to turn around in traveling from one dock to another. Cars, trucks, and trains are parked on the lower level; people stand along the railing or on the upper deck of the boat. They can even stay right in their cars as the boat crosses the water, if they want to.

Show Slides 108 through 116. These are pictures of the Cape May-Lewes Ferry arriving at Lewes, Delaware, from Cape May, New Jersey. These show (a) the appearance of the ferry before it arrives at the pier; (b) its arrival at the pier; (c) the unloading of passengers, cars, trucks, buses and campers; and (d) reloading for the return trip to Cape May.

Slide 108 - Ticket office, Lewes
Slide 109 - Ferry coming in
Slide 110 - Ferry docking
Slide 111 - Ferry docking
Slide 112 - Gangplank going down
Slide 113 - People getting off
Slide 114 - People embarking
Slide 115 - Cars driving onto ferry
Slide 116 - Cape May-Lewes Ferry route

Have the students write a story about a ferryboat ride or about experiences a ferryboat captain might have. If any of the students have taken ferryboat rides, have them relate their experiences to the class. If it is feasible, arrange for the class to take a ferryboat ride. There are two ferryboat operations in Delaware: the Cape May-Lewes Ferry at Lewes, Delaware, and the ferry to Fort Delaware State Park on Pea Patch Island at Delaware City.

LESSON 3 - CARGO SHIPS

Show Figure 2 and share with the class as much of the following background material as is appropriate to the grade level.

> The majority of vessels sailing the world's oceans are cargo ships, also called freighters or merchant ships. The varieties of these ships are numerous, but they can be classified according to the type of cargo they carry.
>
> The general cargo freighter (Figure 2) is divided into holds, much like warehouses stacked one on top of another. (Show Figure 3.) Usually there is a group of holds in the forward part of the ship, toward the bow, and another group in the rear, toward the stern. Each hold is provided with a set of upright and slanted poles called booms, or derricks, which are used in loading and unloading the cargo. The engine room, the crew's living quarters and the bridge are located

amidships. The ship is steered from the bridge. The chain and anchor are in the bow and the rudder and propeller are at the stern. (Show Slides 120 and 121, both of a cargo ship being loaded at the Wilmington Marine Terminal.)

General cargo freighters are loaded and unloaded piece by piece. This is both expensive and time-consuming. For this reason, special types of cargo ships have been designed. One of these is called a bulk carrier. (Show Figure 4.) Bulk carriers transport such cargo as grain, sugar, coal and iron ore. These products cannot be packaged and are carried much like dirt in a dump truck. (Show Slides 118 and 119 of a bulk carrier at the Wilmington Marine Terminal.)

Another special cargo ship is the container ship. (Show Figure 5.) The cargo it carries is prepackaged in large metal boxes about the size of a trailer-truck body. These ships usually have only one large hold. The metal boxes, or containers, are stacked one on top of another. This method allows more cargo to be loaded and unloaded in a shorter period of time, making container shipping a cheaper means of transporting goods than general cargo shipping.

Have the students write stories about cargo ships. Also, have them draw pictures of different types of cargo. Make a large outline of a cargo ship (it can be patterned after Figures 3, 4, or 5) and have the students tape or thumbtack the cargo pictures to it. Also, Figures 2, 3, 4 and 5 may be duplicated as handouts to be colored.

LESSON 4 - OIL TANKERS

Show Figure 6 and share with the class as much of the following background material as is appropriate to the grade level.

This supertanker is designed to carry large amounts of crude oil--500,000 barrels or more. One barrel equals 42 gallons. These ships are usually owned by oil corporations. Larger and larger ships are being built because the greater the amount of oil in a single shipment, the lower the shipping cost per barrel. Since the new supertankers carry a heavier load than other ships, they have a deeper draft. Draft is the distance from the water level to the bottom of the ship. This creates a problem because very few ports are deep enough to handle ships with more than a 50-foot draft. Supertankers may have as much as an 80-foot draft. At present, most supertankers must either transfer their oil to barges and smaller tankers or unload at an offshore terminal from which the oil is piped to a refinery.

(Show Figure 7.) About 60% of the tanker is divided into a number of tanks. The crew's quarters and the steering gear are located in the stern. The bow holds the anchor and chain. The bow also has some storage room for dry cargo. The pilothouse sits above the middle of the ship. It holds the steering system of the ship and provides a good vantage point for the pilot during docking. A special pilot is hired to move ships in and out of harbors.

When a tanker is fully loaded, it sits low in the water. In rough seas, waves sometimes crash over the deck. For this reason two catwalks

are built so that crewmen can travel safely from one end of the ship to the other. After the ship is unloaded, the cargo tanks are cleaned so they can be filled with sea water (clean ballast) to make the ship more stable. The cleaning is done by flushing the tanks with sea water to remove the left-over crude oil. The dirty sea water (dirty ballast) is then pumped into a holding tank so that the oil and water can separate. After the oil and water have separated, the water is dumped back into the ocean and the oil left in the holding tank is saved. As the tanker approaches the port, the clean ballast is dumped to make room for another cargo of oil. Much imported crude oil comes through the Delaware Bay en route to refineries along the Delaware River. Due to the increasing demand for crude oil products--gasoline, heating oil, raw materials for plastic manufacture and other uses--tankers are becoming more numerous. At present they comprise about 40% of the world's total shipping tonnage.

Show Slide 117, a tanker unloading crude oil for the Getty Oil Company of Delaware City. Write a group story about tankers. Draw pictures or color hand-outs of Figures 6 and 7 for the bulletin board.

LESSON 5 - U.S. COAST GUARD AND NAVY SHIPS

Share the following information about the Coast Guard with the students:

The U.S. Coast Guard has many functions. It assists boats and ships in distress. It sets the traffic rules for water travel (the rules of navigation) along the coasts of the United States. It maintains navigational aids such as lighthouses. (Show Slide 123 of the U.S. Coast Guard Nobska Lighthouse at Woods Hole, Massachusetts.)

The Coast Guard watches American shores to prevent smuggling and unauthorized entrance into the territorial waters of the United States by foreign ships. The territorial limits of the United States are presently 3 miles for all ships and 12 miles for all alien fishing boats. Recently, the United States declared that beginning March 1, 1977, the United States will have a 200-mile fishing limit. (Show Slide 124, "The White Stag," a typical U.S. Coast Guard cutter which might be used to patrol our coasts.)

Show Figure 8 and ask the students what is happening in the picture.

A U.S. Coast Guard boat is coming to the rescue of two people whose motorboat has overturned.

Show Figure 9 and ask the students to tell you the name and purpose of the ship in the picture.

This is an aircraft carrier. It is a giant sea-going airport which carries small military planes such as fighter jets and helicopters. It is the most important ship in any fleet of the U.S. Navy. Battleships, cruisers, destroyers and submarines are also part of a fleet.

Show Figure 10 and ask what is happening in this picture.

Helicopters from the aircraft carrier are preparing to recover the returning space capsule upon splashdown.

Next ask why American space capsules land at sea.

It is safer for the returning astronauts to land on water which softens the impact and lacks obstructions such as mountains and cities.

Duplicate Figures 8, 9 and 10 as handouts to be colored.

LESSON 6 - HARBOR BOATS

Have students read the following description of harbor boats:

Most ships are built to travel over the ocean. However, when they reach a harbor, they are too big to easily move around. Instead, they turn off their engines and are pushed by tugboats. (Show Figure 11.) Tugboats are also called tugs or towboats. They are small but powerful, and they can pull or push any big ship into a dock. Tugs that are used in harbors usually measure from 65 to 100 feet in length, and their engines have up to 3,500 horsepower (hp).

Tugboats not only work in harbors but also work on rivers and lakes. They push long strings of barges loaded with cargo to river ports and lake ports. These tugs, which have engines with up to 6,600 horsepower, are even more powerful than those used in seaports. More powerful tugs are necessary here due to the long distance the barges must be pushed. This method of cargo transport is very economical since individual barges can be disconnected and dropped off at various destinations. Tugs and barges have a very shallow draft, making them suitable for many water areas not accessible to larger ships.

A few barges are self-powered. (Show Slide 122, a powered barge on Cape Cod Canal.)

For safety, harbors also have fireboats. (Show Figure 12.) When there is a fire on a boat, fireboats can go where fire trucks cannot. Fireboats are tugboats that have hoses and water pumps. Water for fighting the fire is pumped from the body of water on which they are located. In any harbor, fireboats are just as important as tugboats. Modern fireboats are about 125 feet long, with pumping capacities of up to 12,000 gallons per minute.

Have the students write a story about the duties of a tugboat captain. Duplicate Figures 11 and 12 as handouts to be colored.

Nautical Terms:

Aft - toward the rear or stern of the ship

Amidships - the middle section of the ship

Bow - the front part of the ship

Bridge - the highest room or section of rooms on a ship from which the ship is steered

Derricks - the cranes on a cargo ship used to load and unload goods

Draft - the distance between the bottom of the ship and the waterline (varies depending on whether the ship is loaded or not)

Fore or Forward - toward the front, or bow, of the ship

Helm - the steering system of the ship

Hold - the place on a ship where any cargo is carried

Port - the left side of the ship when facing forward

Starboard - the right side of the ship when facing forward

Stern - the rear part of the ship

LESSON 7 - SEAWAYS AND THE RULES OF THE SEA

Have the students read the following:

> A seaway is the path a vessel takes through a waterway. It is usually the shortest distance between two ports. Many ships use the seaways. To prevent accidents, there are rules for navigators to follow. The rules are like automobile traffic rules, except they are for ships on water instead of for cars on land.

The teacher can supplement the above with the following information:

> A seaway can be broadly defined as a route which ships take in going from one point to another. This can be anything from a canal or river to a standard path of travel across an ocean. Before steam power, ships depended on wind and water currents for their power. In order to make the most of the charted currents and winds, they relied on standardized routes. Today's high-powered ships do not need the winds and currents. For them, the shortest route is the fastest, so the shortest routes have been charted, taking into account intervening land masses, ice-infested waters and regions of continuously bad weather. Because so many ships use the charted routes, an international set of rules to which all ships adhere is necessary.
>
> All ships use sound, light, and radio to warn of their approach and to be warned of the position of other ships or topographic dangers such as shallow water or a rocky coast. For instance, when visibility is low a ship blows its horn in long, steady blasts. A ship in distress uses four short horn blasts or a Morse Code SOS on the wireless (three shorts, three longs, three shorts). In addition to internationally understood signals between ships, there are buoys. Buoys are floating objects moored to the bottom of a waterway. They are the traffic signs of the water. By their color, shape, number, and light, buoys tell the navigator how he can avoid hazards and follow a proper course.

Using a globe, have the students trace with their fingers the route a ship would take traveling from California to South America or from the Eastern United States to Europe.

Figure 13 could be used as a transparency or handout in place of the globe for tracing seaways from one port to another.

SUGGESTED ACTIVITIES

Make a Storybook

Make a collection of stories by asking the students to find a story about one of the kinds of ships they have studied. If they prefer to make up an original story instead, use that for the collection. Stories dictated by students and written on the chalkboard could also be included in the book. Try to get variety

in the types of ships used in the stories. When the stories are ready to assemble, give each student two sheets of colored construction paper to make a cover for the booklet. Students can suggest titles for the book, and a vote will decide the final name. The title can then be printed on the book with a crayon and a cover illustration added.

Bulletin Board Display

Make a display entitled "Ships and Seaways." Display the ship pictures brought in by the students along with the crayon or watercolor pictures of ships they have made.

Make a Sandbox Sea

Be imaginative! Sand can represent the shore. A large pan can be placed in the sandbox for the sea. Plastic boats are inexpensive. The children may pretend they are operating a ferryboat, taking a cruise, or transporting oil.

Make a Ship

Materials: walnut shells, clay, toothpicks, construction paper, and scissors

Procedure: Half a walnut shell forms the hull of the ship. Place a small ball of clay in the bottom of the shell; use this to anchor a toothpick mast. Sails are cut from construction paper and small slots cut or punched in the paper through which you can insert the toothpick mast. Try sailing the boat.

Make a Collage

Use scraps of fabric, construction paper, buttons, and other materials to construct a ship collage.

Music

Sing songs of boats and ships, e.g., "Sailing, Sailing," or "Row, Row, Row Your Boat." Play a record of songs about the sea.

Storytime

Select a story to read aloud to the class in which a ship or the sea plays a prominent part. See Teacher's References for suggested books.

Field Trip

Plan a field trip on a ferryboat. One possibility is a trip to Fort Delaware State Park on Pea Patch Island. Since departure dates and times are subject to change, you should obtain specific information from the Park. Consult the telephone directory under State of Delaware; Department of Natural Resources and Environmental Control; Division of Parks, Recreation and Forestry; Fort Delaware State Park.

On the trip, the students might want to cast drift bottles overboard. Drift bottles are used to determine the direction and force of the tides. Although elementary school children are not ready for a comprehensive study of currents, it might be fun for them to see how far a bottle will go. To make drift bottles, have the students work in groups of four and prepare stamped, self-addressed post

cards as shown below. Write on the card the date and place you expect to throw the bottle overboard. Number the cards.

#1 _____ School _____ Grade

This is part of a science project in our school. We are studying currents and tides. This drift bottle was cast overboard off _____ (place) on _____ (date).
You can be part of our project by filling in the information asked for below and dropping the card in a mailbox. Please dispose of the bottle properly.

Where was the bottle found? _____

Date _____ THANK YOU!

Place each card in a dry soft drink bottle. Cork and seal each bottle by dipping the cork end in warm paraffin several times to make it watertight. The paraffin should be carefully handled by the teacher at all times and the directions on the box should be followed exactly. Never melt paraffin over a direct flame. A brightly colored tag tied to each bottle will help attract attention.

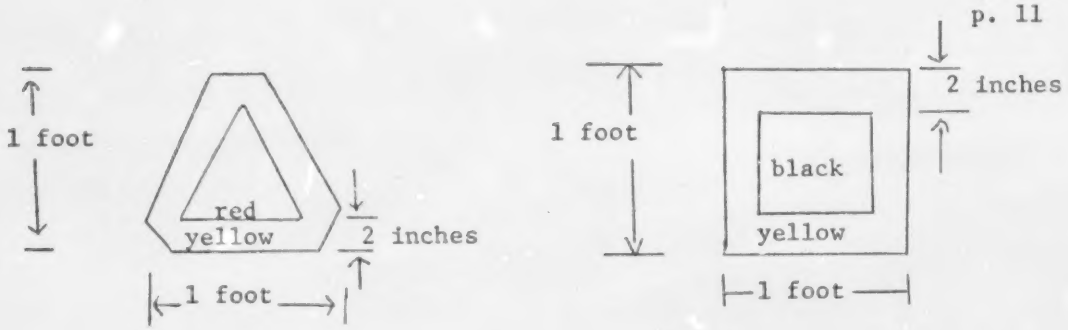
Drop some of the bottles during the crossing to Pea Patch Island and some during the return trip. Keep a record of each dropping. When you drop the drift bottles overboard, it will make the lesson more interesting if you know whether the tide is moving up the Delaware River or down. Tide tables, listed for one week at a time, can be found in local newspapers. Tide tables covering several months are available at the Delaware City Marina and at marine equipment stores.

Sometimes the bottles are carried many miles before they are picked up. Hopefully, the finder will open the bottle and report back to the investigator. Ask the students what factors in addition to currents could cause the movement of the drift bottles. The answers might be wind, stormy seas, weeds catching them, man's interference, etc.

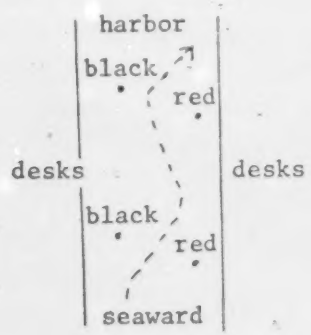
Games

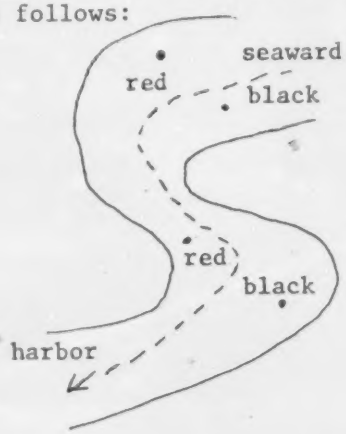
Ferryboat Ride: Have the students pretend they are taking a ferryboat ride. Assign the roles of captain, ticket taker, crew members and passengers. Encourage the students to use as many nautical terms as they can.

Navigation: In all the coastal waters of the United States, red and black are the two colors used to mark channels and waterways. Red marks the right side and black marks the left side of a channel when boats are returning from the sea. Have the students color two red and two black pieces of paper or cardboard as illustrated:



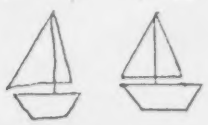
Yellow is used to make the markers stand out. Arrange desks or chairs into two rows about 10 feet apart. Designate four students to hold the markers and place them between the two rows. Label one end of the two rows "seaward" and the other end "harbor." Have the remaining students stand at one end of the channel. Explain the system of channel marking to the students. Then have the students pretend they are boats navigating from the sea to the harbor or from the harbor to the sea. The desk arrangement can be shaped in different ways, for instance, a "U" or an "S." Two ways that this game can be played are diagrammed as follows:



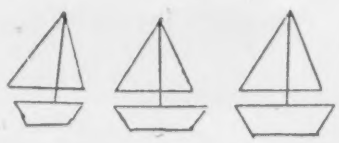


Mathematics

Mathematics can be taught by having the students count the people seen on the ferryboat slides. The teacher can also draw sets of boats and teach the concept of sets.

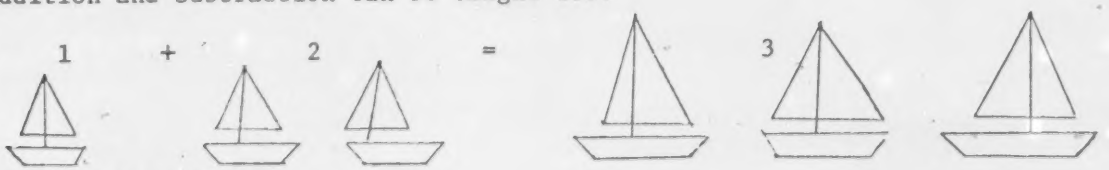


Set of 2



Set of 3

Addition and subtraction can be taught too.



Physical Education

The children can learn this little ditty:

I'm going on a boat trip.
I'm sailing on the sea.
I'm going to take some friends with me.
Here's how many friends there will be.

The student then bounces a ball or jumps rope, counting the number of times until he misses. If the student misses on the 14th jump, write 14 on the board. Correlate with mathematics and ask: How many tens in 14? How many ones?

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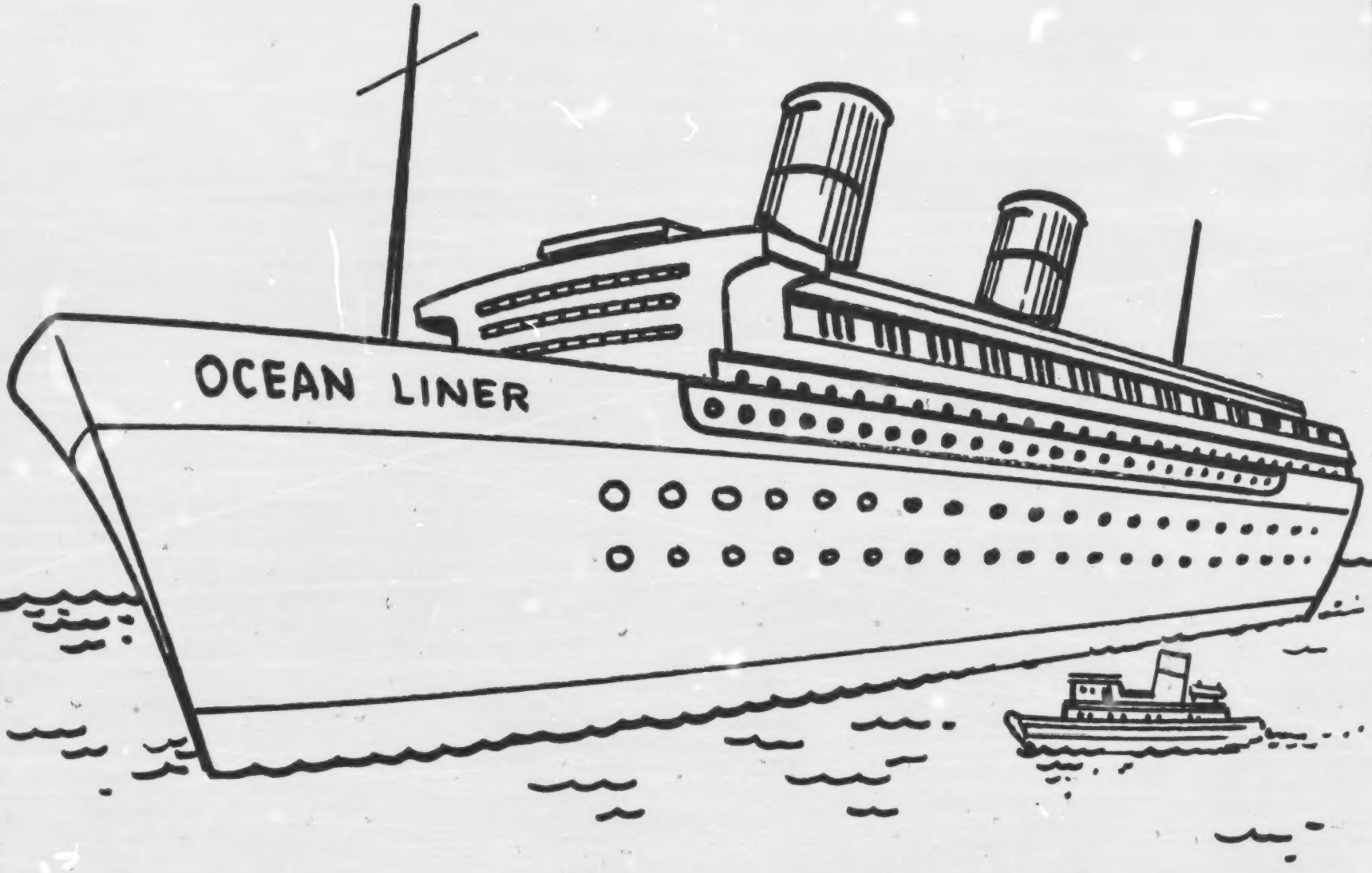


FIGURE 1

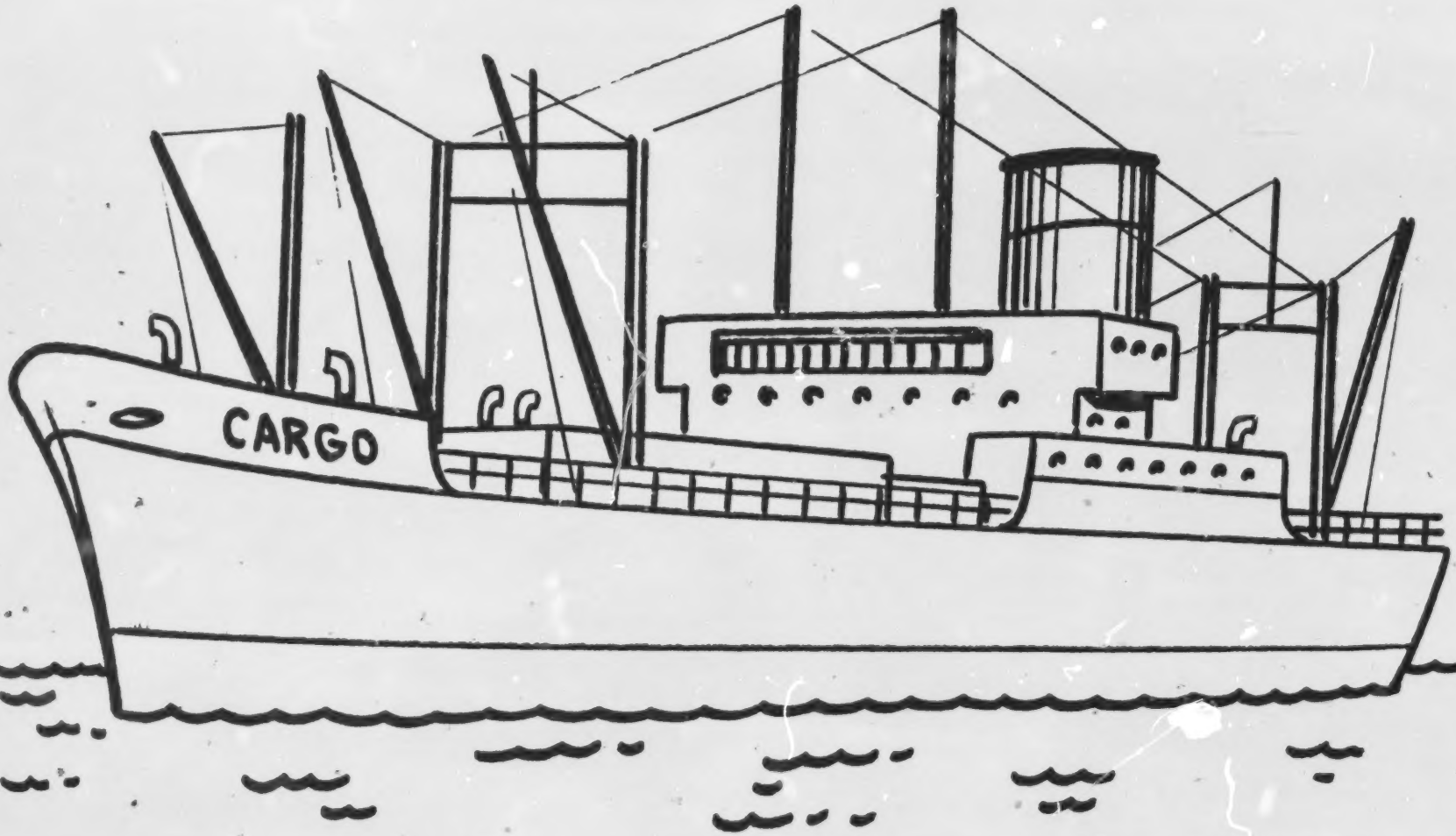


FIGURE 2

INTERIOR VIEW OF A GENERAL CARGO FREIGHTER

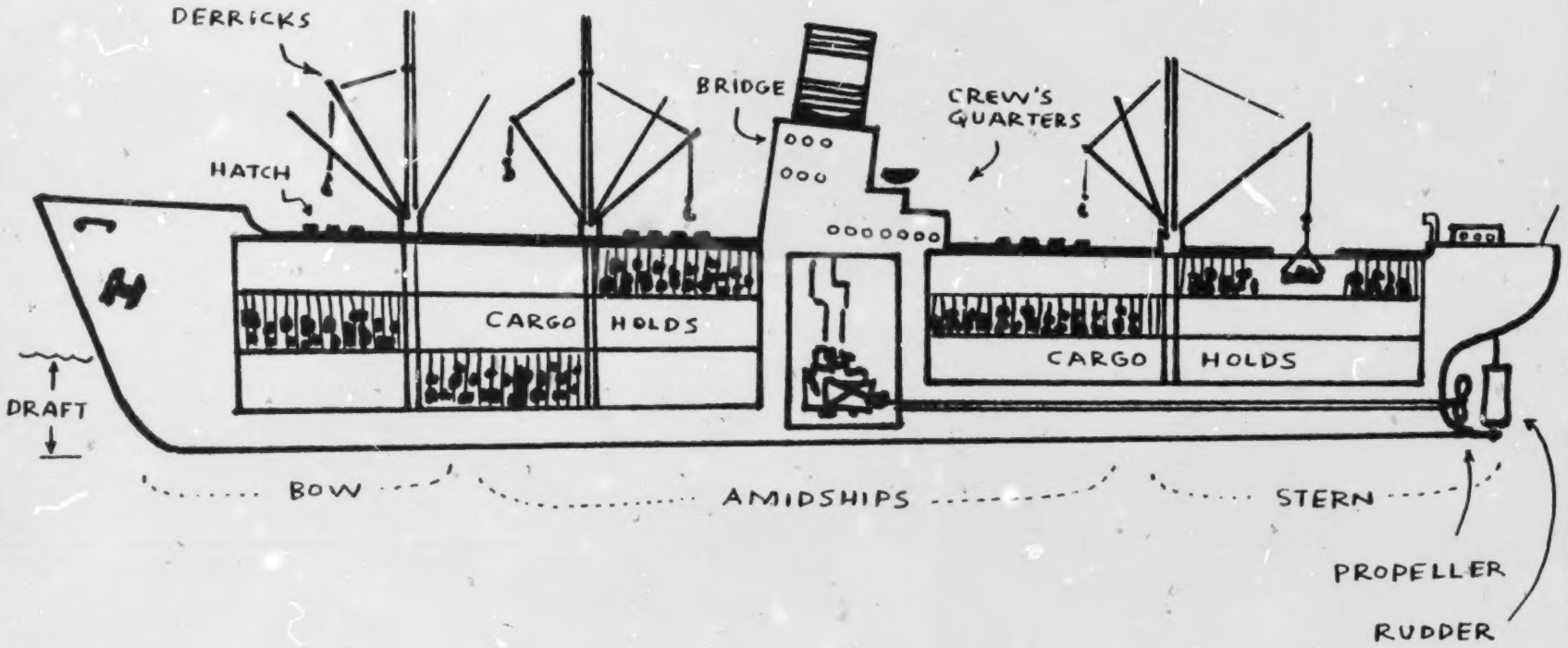


FIGURE 3

INTERIOR VIEW OF A BULK CARRIER

FIGURE 4

INTERIOR VIEW OF A CONTAINER SHIP

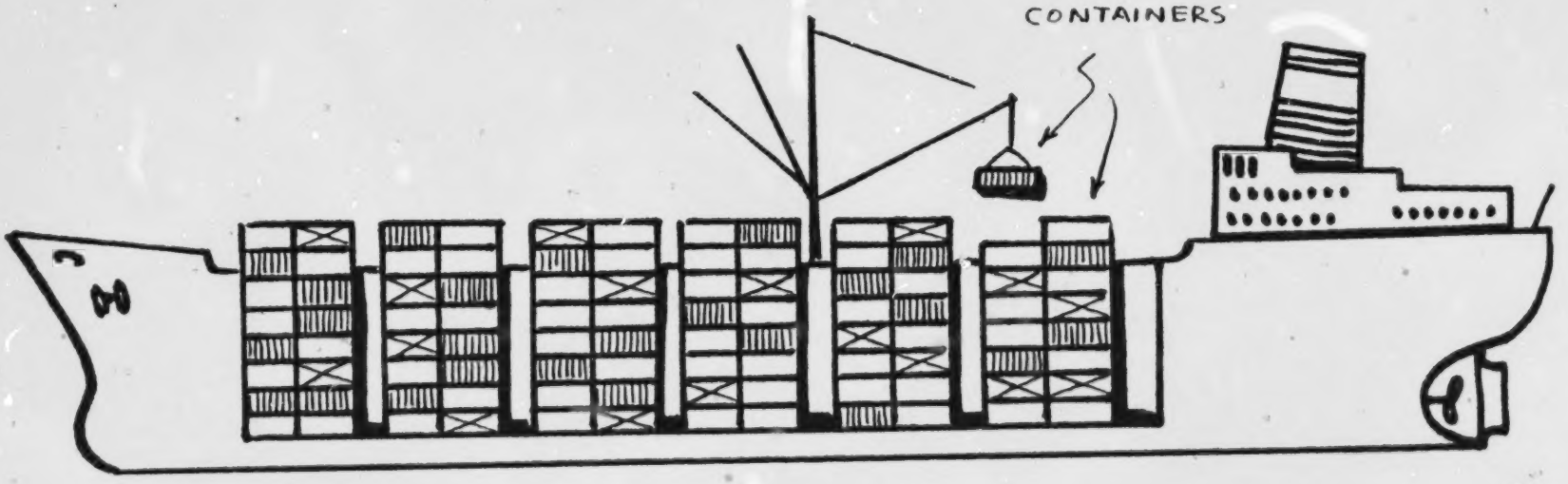


FIGURE 5

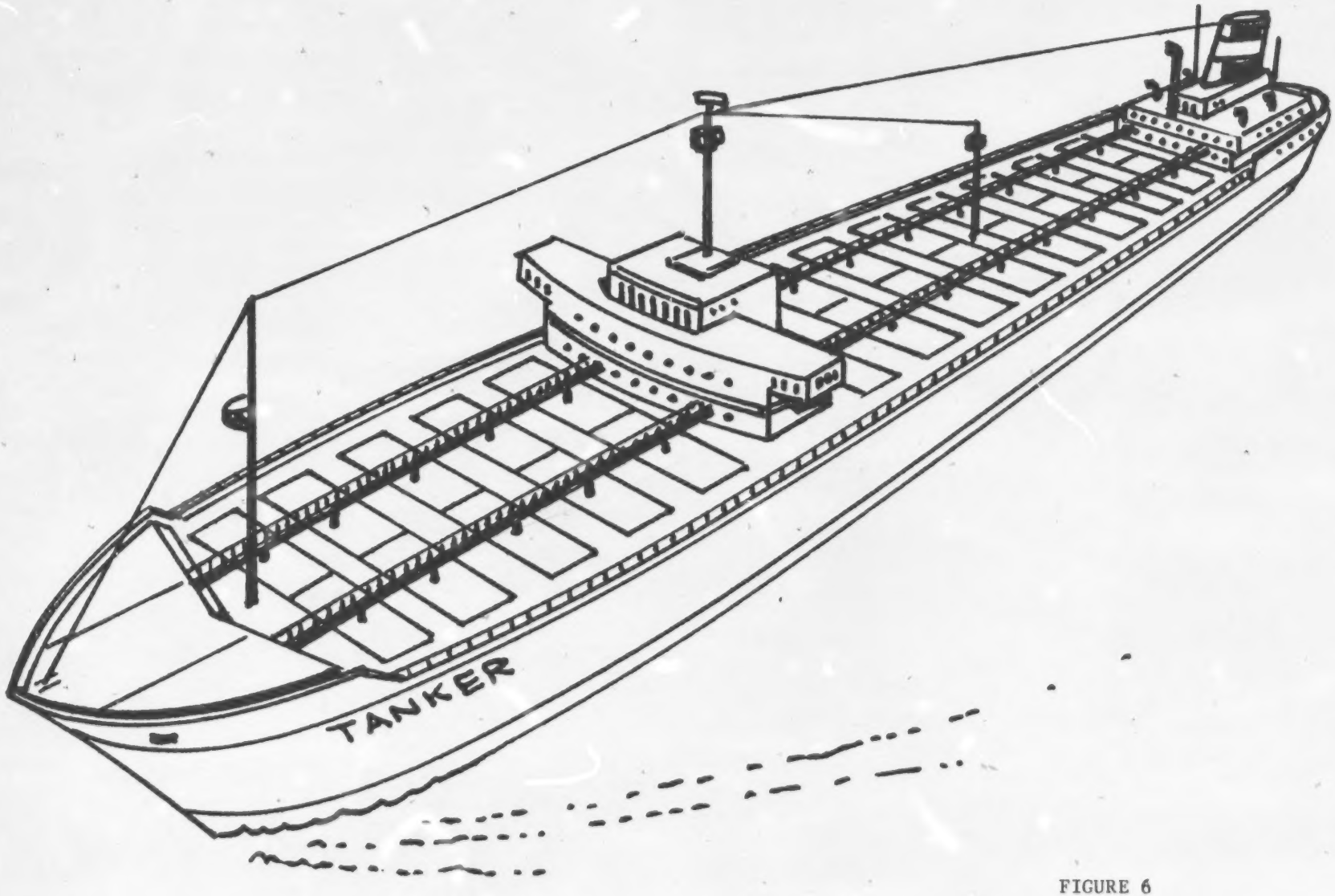


FIGURE 6

INTERIOR VIEW OF A TANKER

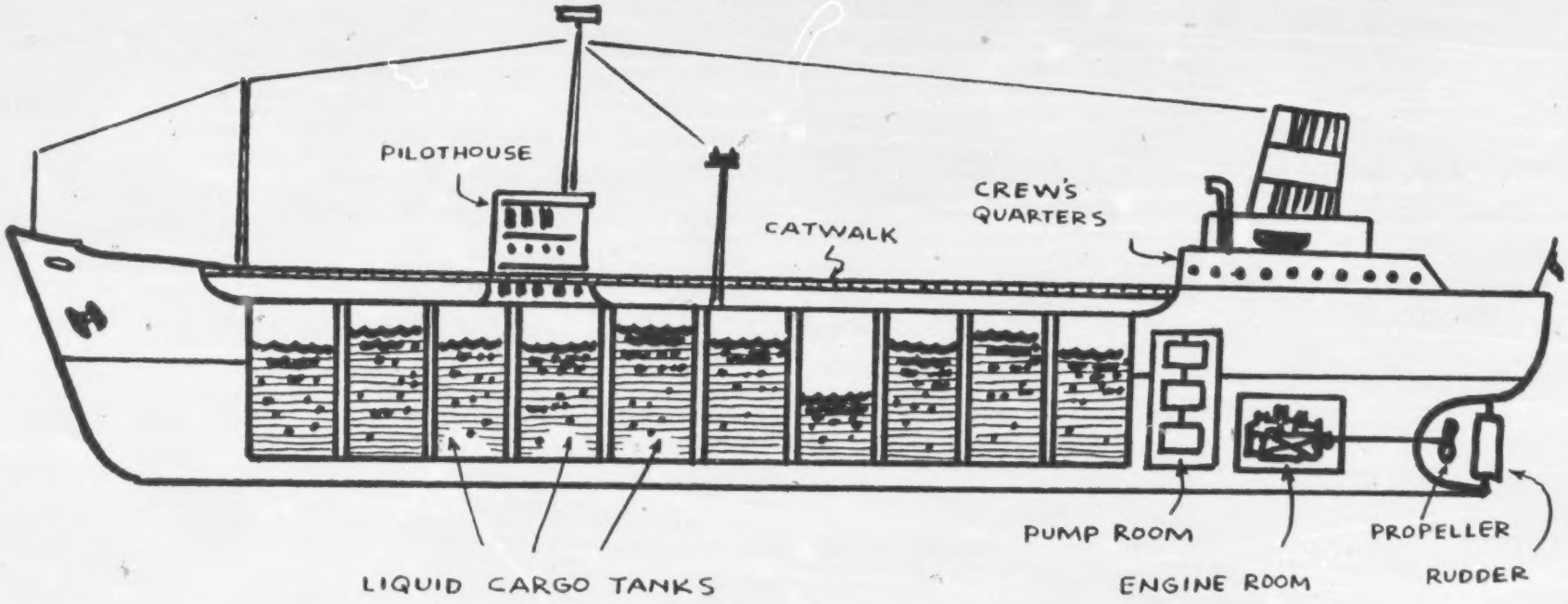


FIGURE 7

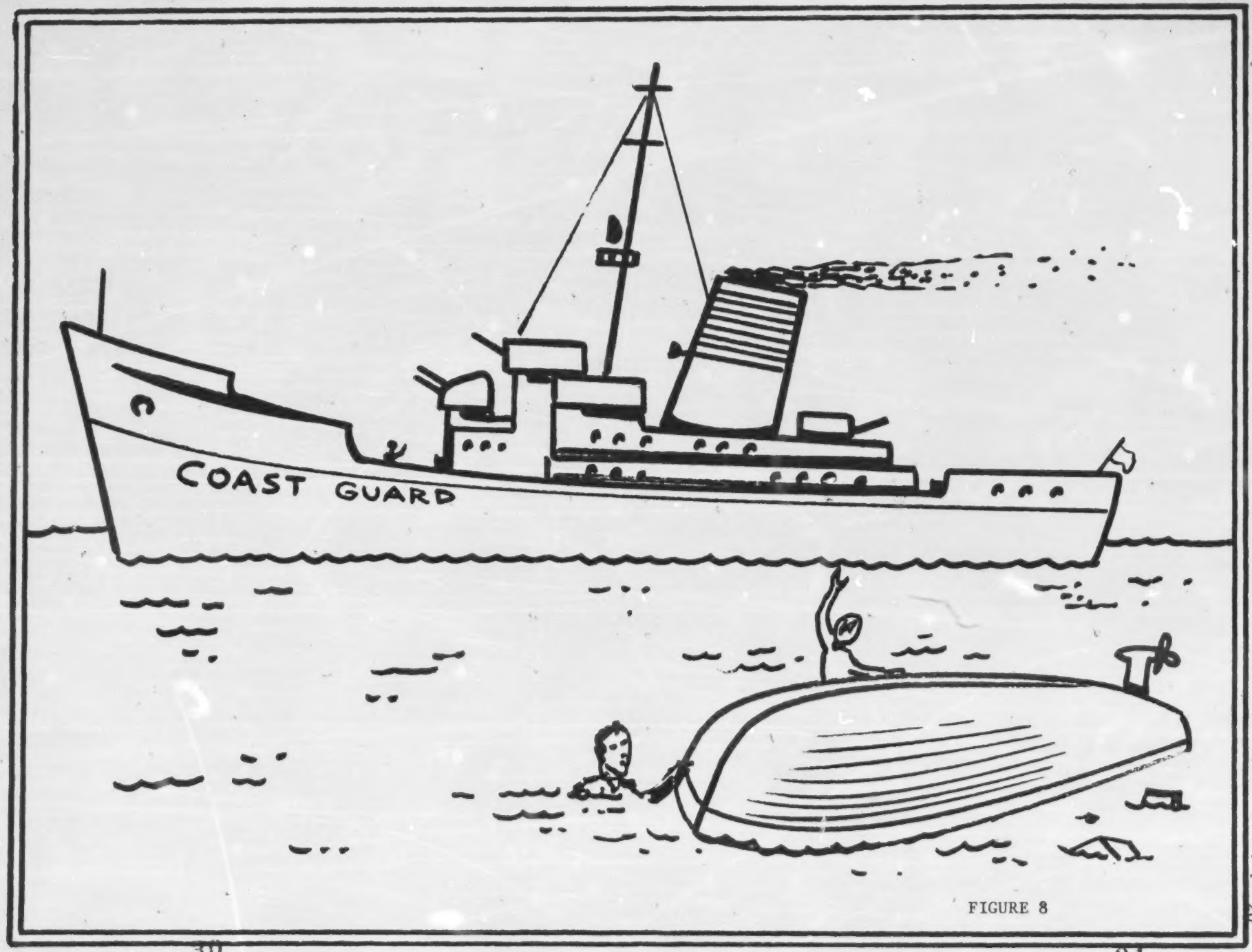


FIGURE 8

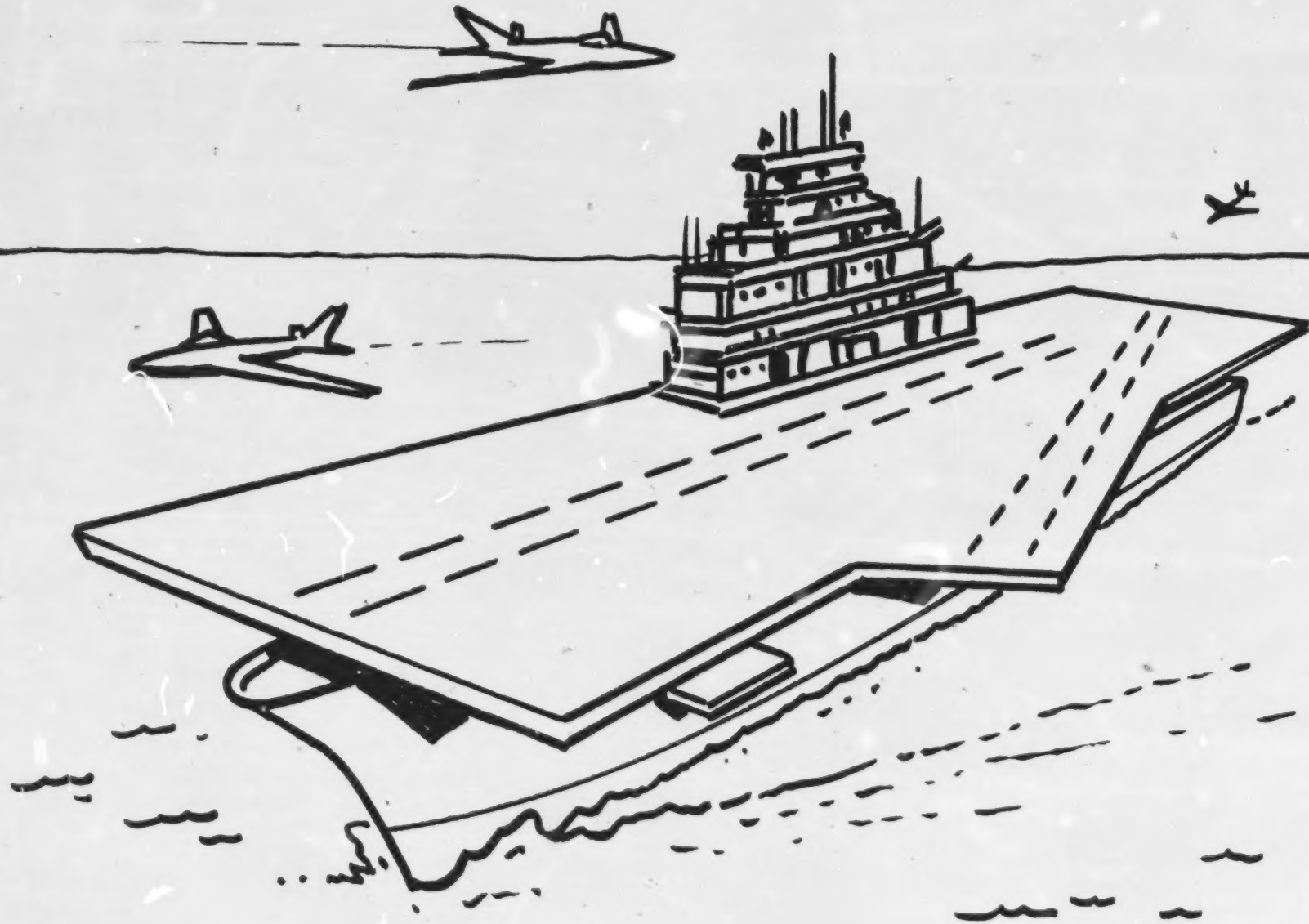


FIGURE 9

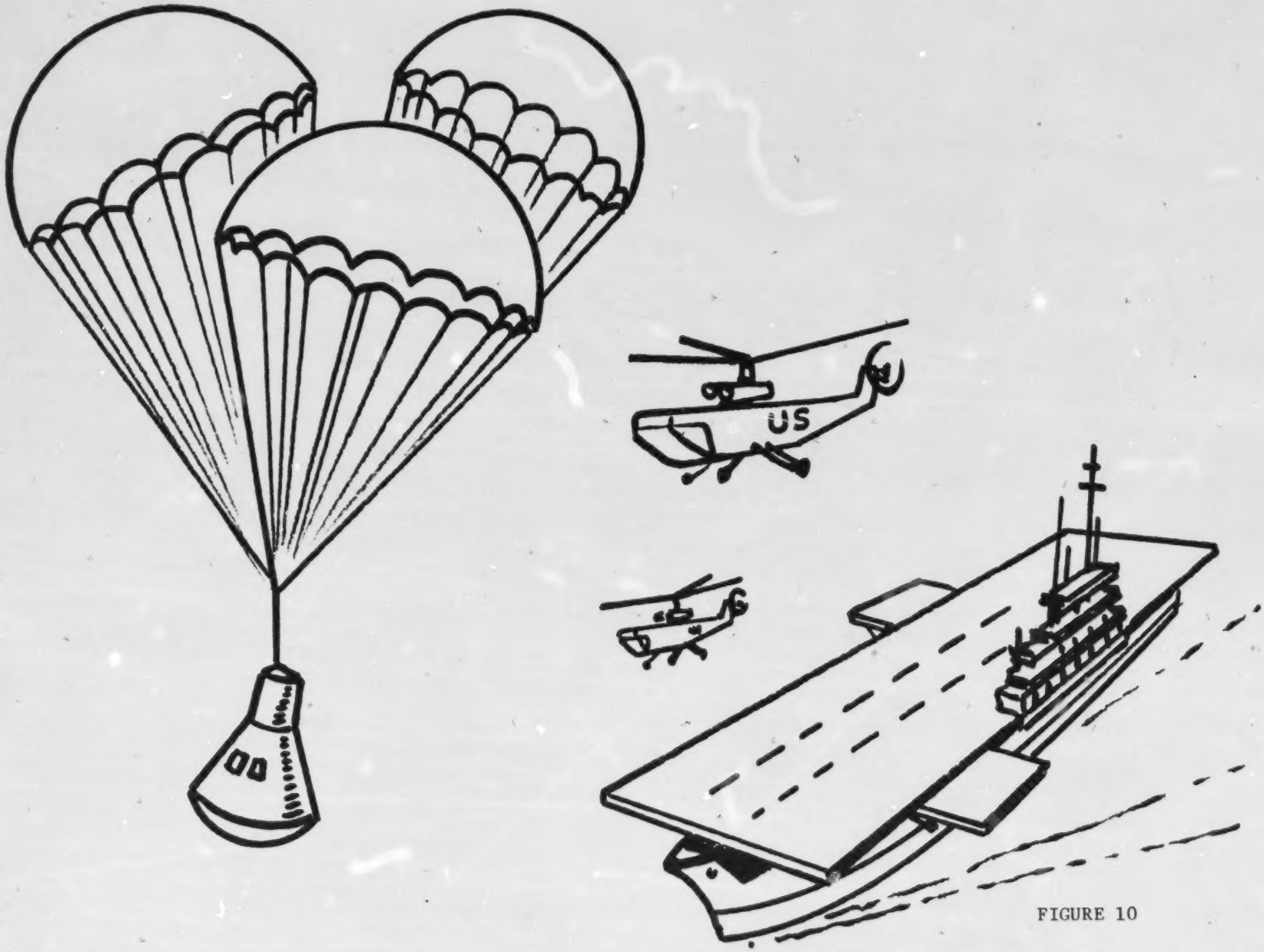


FIGURE 10

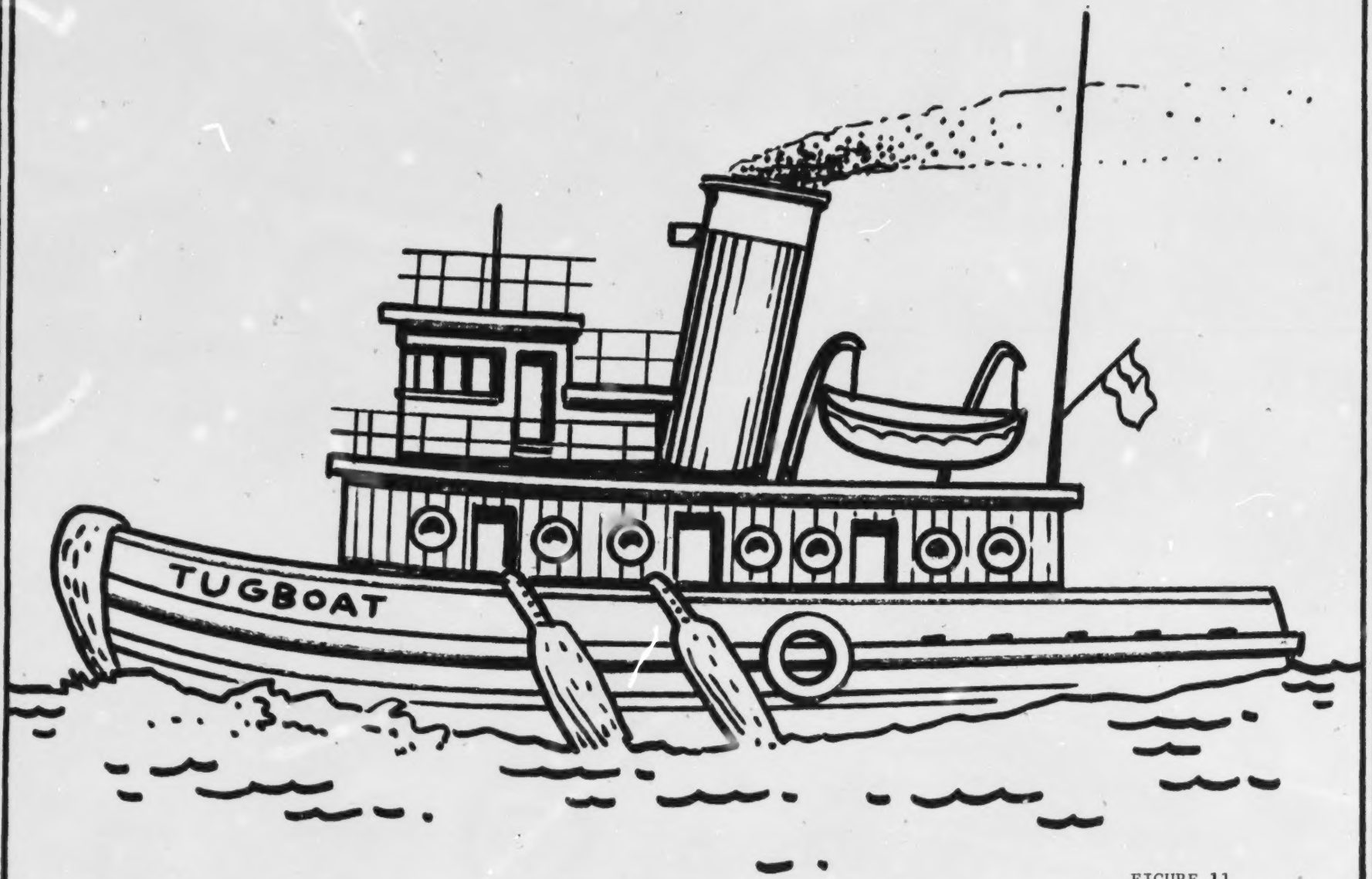


FIGURE 11

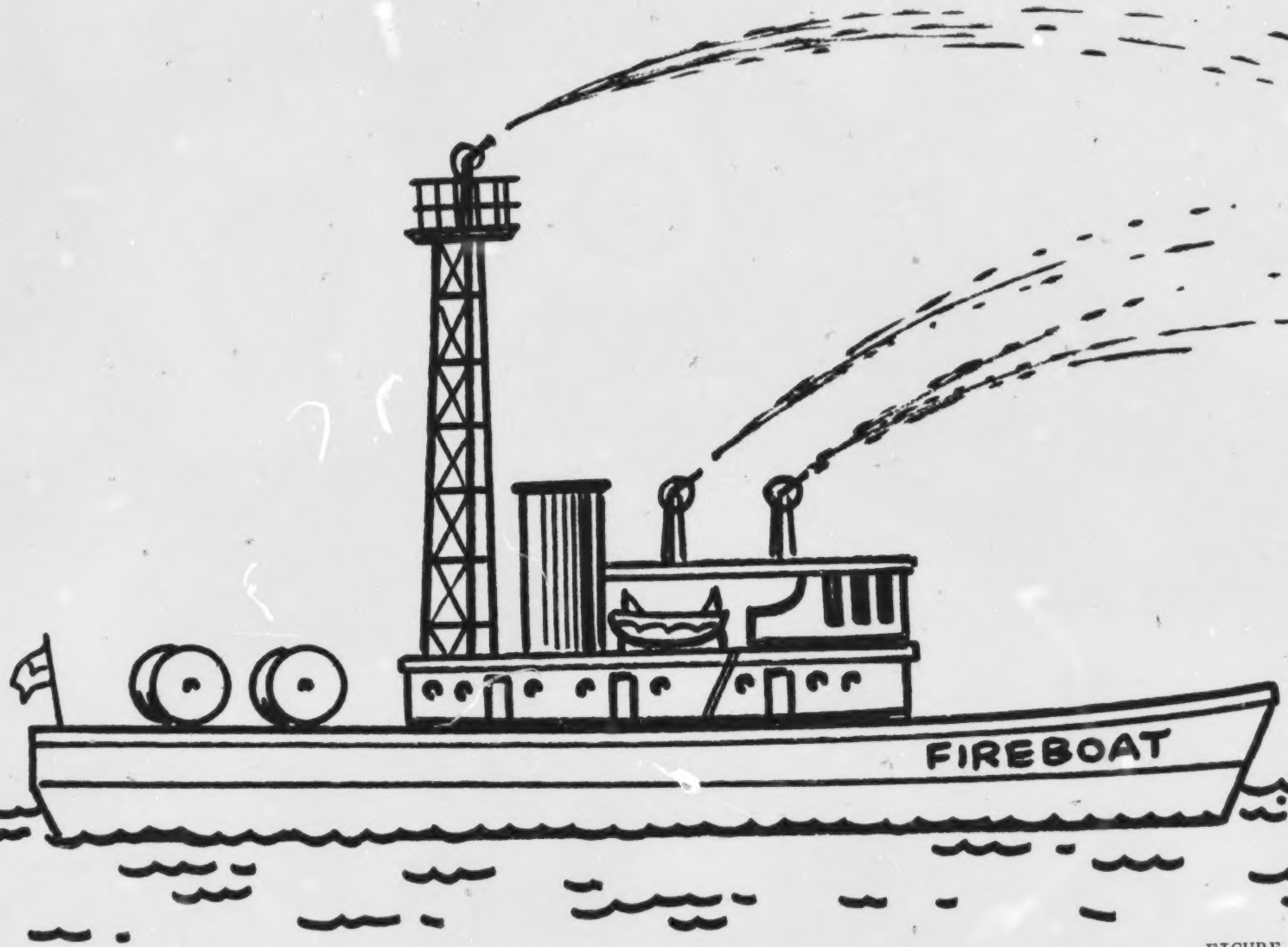


FIGURE 12

OCEAN TRADE ROUTES

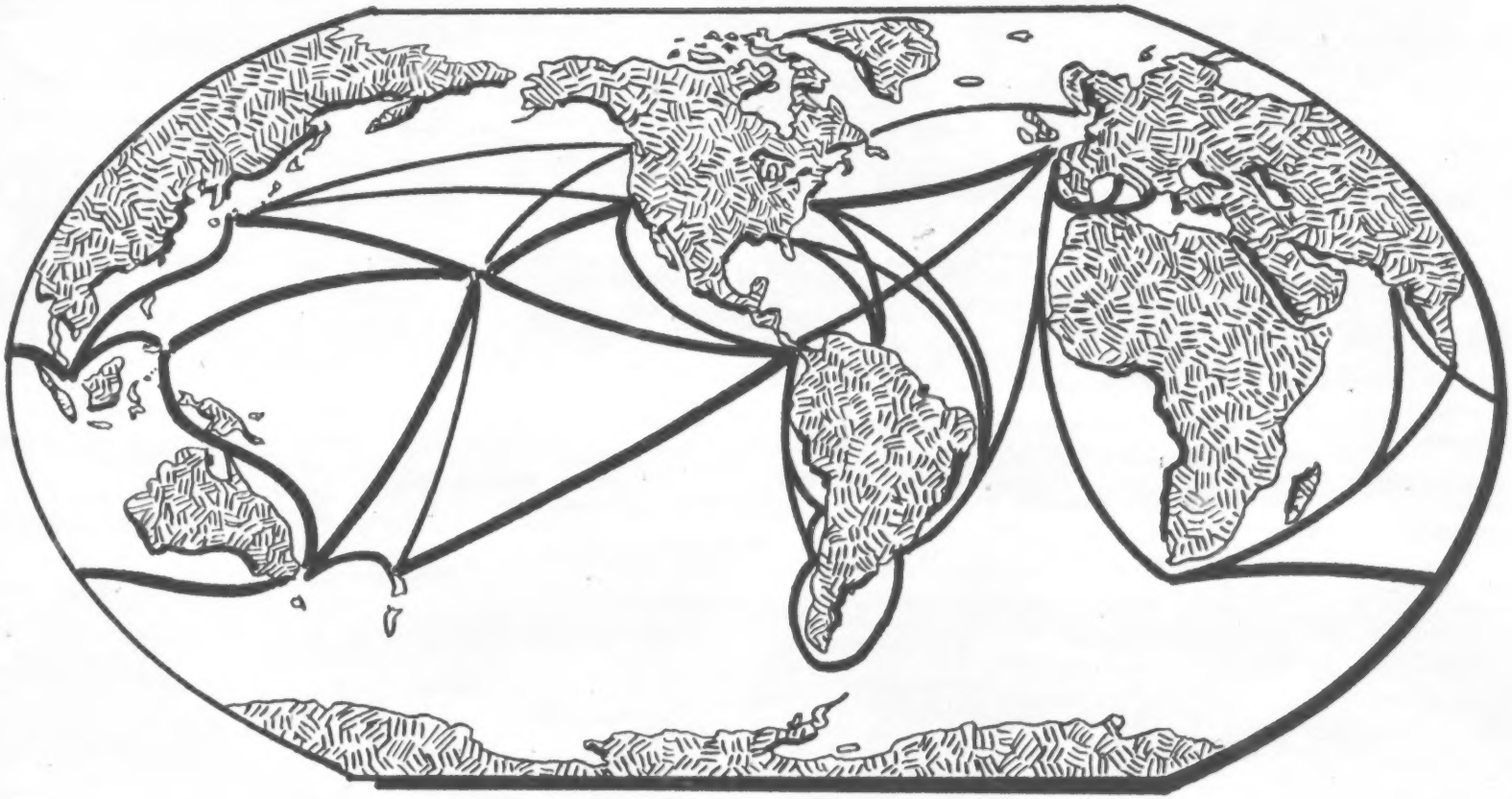


FIGURE 13

Language Arts Activities Supplement

#105 SHIPS AND SEAWAYS

Unit Overview: Consists of six parts, each one dealing with different types of ships and navigational rules. Thirteen transparency/handout masters and seventeen slides provide illustrations of tankers, cargo ships, harbor boats, ferry boats and others. The lesson is designed to be either teacher directed or self taught depending on the grade level of the class. Many activities are suggested to combine the student's imagination with the knowledge gained from the lesson.

Grades K-1

Cargo Ship

Objective: To review beginning sounds.

Materials: Magazines

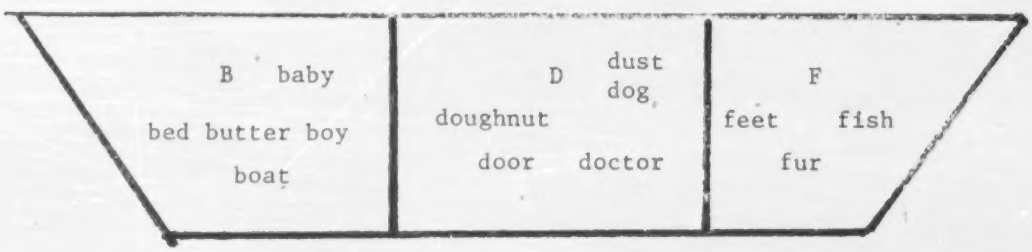
Large pieces of plain paper

Glue or paste

Scissors

Procedure: Review the job of a cargo ship with the children. Tell them they are going to fill the holds of their own cargo ships. Each child is to be given a magazine, a pair of scissors, paste, and a large sheet of plain paper. Then assign each child one, two, or three letters of the alphabet (e.g., assign one student B, D, and F and another student S, M, and C). The child's job is to go through the magazines and cut out all the pictures and/or words that begin with the assigned letters. Explain that the cargo for the ship must begin only with these letters.

After collecting the pictures and words, the children should draw a large cargo ship on their papers, dividing it into one, two, or three holds depending on how many letters have been assigned. In the first hold, all pictures and/or words that have the same beginning letter or sound should be pasted. The same should be done for the other holds.



As the children work, go around the room and ask each child to name all the cargo that begins with the same sound. The finished ships can be displayed in the room and used as a review of sounds.

#105 SHIPS AND SEAWAYS (cont.)

Grades 2-3

Dictionary Work

Objective: To review alphabetical order using a dictionary and guide words.

Materials: Copies of the handout on the following page.

A dictionary for each student

Pencils

Procedure: This activity is to be done with students who have worked with the dictionary and have used guide words before. Make copies of the handout on the following page and give each student a copy. Explain what is expected in each column and do the first word with the students.

Letter Writing

Objective: To give the students practice in writing letters and using the correct form of a letter.

Materials: Copies of the handout on p. S-4

Paper and pencil

Envelopes (optional)

Procedure: Make copies of the handout on p. S-4 . Give each student a copy. Explain to the class that this is the correct form of a letter. Tell them about the different parts of a letter and that the boxes indicate where important capital letters go. Ask the class to use this form to write a letter to the captain of any one of the ships studied in the "Ships and Seaways" unit: Passenger Ship. Oil Tanker, Ferry Boat, Cargo Ship, Tugboat, etc. In the letters the students should ask if they could become a crew member aboard the ship. They must explain in the letter:

1) Why they want to work on that particular type of ship.
2) The work they would do aboard.
3) Some past experience they have had with ships or the water.
4) Why they would be good sailors.

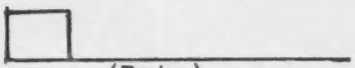
The letter may be written directly on the handout or on regular paper with the handout used simply as a reference.

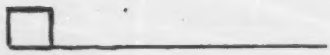
#105 SHIPS AND SEAWAYS (cont.)

Name_____

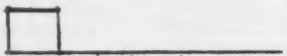
Word to look up	Page word is found on	Definition of word	Guide words on that page	Put words in alphabetical order
aft				1.
stern				2.
helm				3.
bow				4.
starboard				5.
derricks				6.
hold				7.
fore				8.
admidships				9.
draft				10.
bridge				11.
port				12.

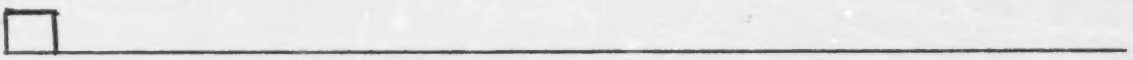
#105 SHIPS AND SEAWAYS (cont.)


(Date)



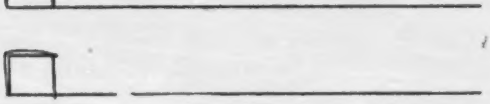
(Inside Address)

Dear 
(Greeting)



(Body)

(Closing)



#105 SHIPS AND SEAWAYS (cont.)

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Battle Stations. Margaret C. Scoggin. Alfred A. Knopf. 1953.

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How We Travel on Water. Malcolm Provus. Benefic Press. 1962.

John F. Kennedy and PT 109. Richard Tregaskis. Random House. 1962.

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The Story of Old Ironsides. Norman Richards. Childrens Press. 1967.

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The Story of the Mayflower Compact. Norman Richards. Childrens Press. 1967.

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The True Book of Ships and Seaports. Katharine Carter. Childrens Press. 1963.

The True Book of Travel by Water. John Hornby. Childrens Press. 1958.

The Tunnel Builders. James E. Kelly and William R. Park. Addison-Wesley Publishing Co. 1976.

What Does a Coast Guardsman Do? Grant Compton. Dodd, Mead & Co. 1968.

What Do You Do with a Drawbridge? Dorothy Wyeth Dobbins. Addison-Wesley Publishing Co. 1976.

You Visit a Steamship-Airport. Leonard Meshover. Benefic Press. 1966.

Teacher References

D-Day--The Invasion of Europe. Al Hine. American Heritage Publishing Co. 1962.

Great Days of Sail. Jean Riverain. Follett Publishing Co. 1965.

The Great Trade Routes. Jean Duche. McGraw-Hill. 1973.

The Lost Convoy. Charles S. Strong. Chilton Book Co. 1960.

Sea Fights Under Sail. Christopher Lloyd. McGraw-Hill. 1970.

The Sinking of the Bismarck. William L. Shirer. Random House. 1962.